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The
ANGORA
GOAT



THE ANGORA GOAT is especially resistant to disease and is an energetic worker. It thrives on plants which are detrimental to the development of choice grass pastures and the production of farm crops.

Its habit of browsing off the buds and leaves of brush has been taken advantage of in clearing land.

The carcass furnishes good meat, the mohair is in demand for important fabric specialties, and the skin can be made into morocco leather.

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THE ANGORA GOAT

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THE ANGORA IN AMERICA

ANGORA GOATS play a unique rôle in American thought and economy. They graze by millions in our country, yet the very existence of the breed is unknown to many. The goats are sent to market by the thousand every year, yet no menu card ever lists Angora chops or Angora roast. Fabric made of their lustrous hair is worn and admired from coast to coast, yet only a few identify it or know its source.

Asia Minor is the original home of the Angora goat. The matchless fabrics of the Orient first served to impress the world with the excellent character of mohair. South Africa and the United States have since become the other most important centers of mohair production. For many years an edict of the Sultan of Turkey prohibited the exportation of Angora goats. For about 20 years the Union of South Africa prohibited exports of stock, not rescinding the embargo until 1923. In the presence of this apparent handicap, American breeders have evolved Angora goats second to none in vigor, uniformity, weight of fleece, and character of hair.

Far from his native land, strangely striking and interesting in appearance, unique in his enjoyment and utilization of what would otherwise be waste forage and browse, the Angora goat has no peer in many respects among the profitable animals of our country. By choice a dweller of desert and brush land, clothed in the fine raiment he gave to monarchs of old, the Angora has "conquered by enduring."

IMPORTANCE OF PROPER CONDITIONS FOR RAISING ANGORAS

Any one planning to raise Angora goats and to engage in the production of mohair in the well-defined Angora regions of the United States should avail himself of first-hand information from practical goat growers. No collection of systematized knowledge on paper

¹ Mr. Williams resigned from the department June 30, 1921. Revised by D. A. Spencer, senior animal husbandman.

can equal personal contact with and the actual seeing of the practices that must be followed. Convenient markets for surplus stock and the approximate price that may be expected should be ascertained in advance. The condition of the mohair market and current prices for hair may always be learned from the trade. The beginner situated at a distance from bands of goats, and for that reason with no experience in their management, will do well to start in a small way. Land of high altitude and rugged topography can often be used by goats more easily than by other livestock, but they can also browse successfully on brush land that is only rolling, and even level, if it is well drained and free from sheep or goat parasites. A good water supply and all-year browsing are also important on a desirable goat range.

Unfortunately, there is a widely prevailing popular belief that the goat is a robust, elm-peeling, can-eating, neglectable animal that may be turned out to thrive where carelessness and lack of attention prevail. This conception is erroneous. Throughout this country



FIG. 1.—Angora goats on cut-over lands in Louisiana

the successful goat rancher gives to the details of his business a supervision not exceeded in other lines of livestock endeavor. Success with goats can be attained in no other way. Happy-go-lucky methods may be found here and there in all goat sections, but they usually result in disastrous losses and have no place in permanent Angora-goat production.

DISTRIBUTION IN THE UNITED STATES

TEXAS

More Angora goats are grazed in Texas than in all other sections of the United States combined. This is due to two principal causes: (1) The State has a large, well-defined area of rugged, formerly low-priced land, which, on account of the nature of the vegetation, the mild winters, the generally dry atmosphere, and the altitude of from

1,000 to 2,000 feet, is especially adapted to goat grazing; (2) the tenure of land has permitted the acquisition of large areas, so that a goat project has a reasonable assurance of permanency, some pasture rotation, and economy in herding costs.

OTHER PARTS OF THE SOUTHWEST

Similar open-brush range on the public domain and in the national forests makes the remaining part of the Southwest the second largest Angora-ranging section in this country. Also homesteading and the purchase or lease of titled land adjacent have resulted in definitely bounded private ranges for goats.

THE NORTHWEST

The Willamette Valley, in Oregon, has carried large numbers of goats on separate farm-clearing projects and still has excellent breeding herds. Many fine orchards in the Northwest stand on ground first brushed off by Angoras. Oregon and Washington have vast



FIG. 2.—Farm flock of Angoras in the Ozarks

areas of logged-off land, part of which is especially adapted to permanent goat range, and other parts may well be brushed off for agriculture and orchard development.

OZARKS AND VICINITY

The Ozarks in southern Missouri and adjacent territory now contain many bands of Angoras and doubtless will support more on a permanent brush-utilizing basis supplemented with winter feeding. (Fig. 2.)

OTHER SECTIONS

In nearly every State Angora goats may be used for brush-clearing purposes within such limits as markets, rigorous climate, altitude, humidity, and the nature of the range impose. (Fig. 1.) Outside the typical goat range, Angoras may be used successfully for brush-clearing purposes by handling them according to the principles of sheep husbandry with respect to winter feed and shelter. Unless there is brush to be utilized or to be destroyed the raising of Angora goats may not be advisable.

ORIGIN OF RANGE AND REGISTERED STOCK

American Angora goats are the product of long-continued selective breeding from imported stock crossed in many cases upon a foundation of common Mexican does. In this process select, high-grade bucks, imported bucks, and bucks raised from imported stock have been used.

By an original inspection of high-grade American Angoras a registry system was established in 1900 by the American Angora Goat Breeders' Association and from that time until 1924 all goats registered by that association have traced on both sires' and dams' sides to the original inspected stock and its progeny or to goats subsequently imported. The National Angora Record Association, which

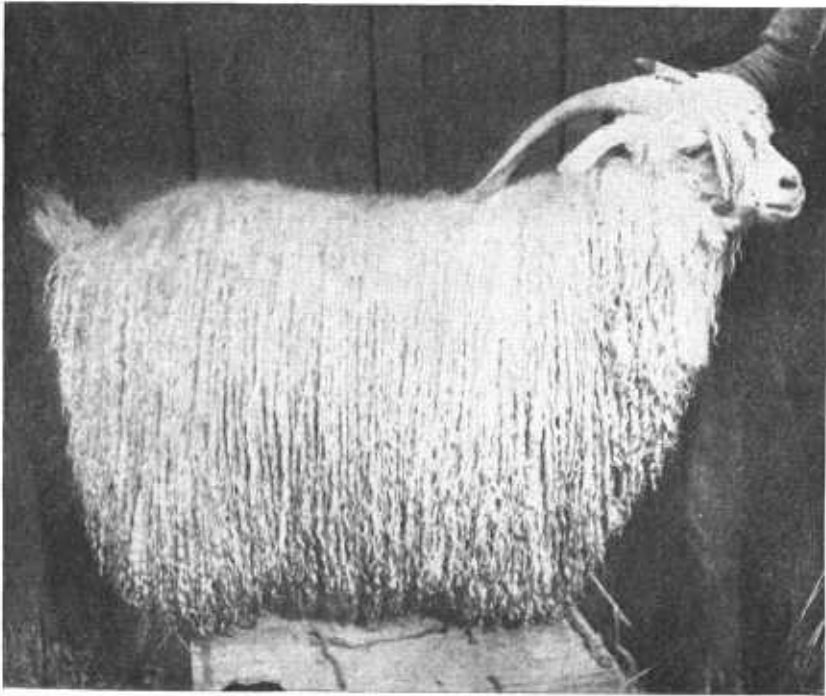


FIG. 3.—A good type of Angora buck

was organized and incorporated under the laws of Texas in 1918, was merged with the American Angora Goat Breeders' Association in 1924. The National association was establishing its register on the basis of inspected animals in a manner similar to the method followed by the American Angora Goat Breeders' Association in 1900. Upon the merging of the two associations a restricted admission of the offspring of goats that were recorded in the National association was arranged to insure the acceptance of only meritorious stock. Most range herds of goats are composed of select, high-grade does topped by registered bucks purchased from breeders who make it an exclusive business to produce superior registered animals.

PRESENT TYPE OF THE ANGORA GOAT

Range Angora bucks when mature should weigh from 125 to 175 pounds; bucks at 18 months of age, 80 to 90 pounds; finished mature wethers, 125 to 175 pounds; grown does, 65 to 90 pounds; 18-month does, 50 to 70 pounds.

The doe and kid band under range conditions shears an average of $3\frac{1}{2}$ to $4\frac{1}{2}$ pounds of hair annually, taken off in two clips; and wether stock, from 4 to 5 pounds. Breeders' herds sometimes clip double these weights. Opinions vary among breeders with regard to the relation of the size of the goat to vigor and quality of hair. It has often been found that extremely large goats have comparatively coarse hair; however, this is not always the case. Reasonable size is generally associated with greater vigor than extremely small size. The largest goat consistent with fineness of fleece is ultimately sought because of the physical capacity to produce a heavy fleece with a large surface on which to grow it.

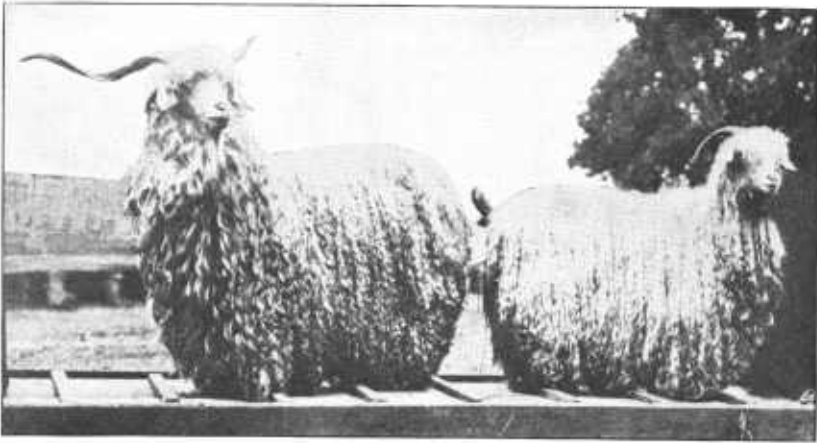


FIG. 4.—Angora buck and doe. Good type of breeding stock

No effort is being made to develop a hornless Angora. Ears should be drooping; "fox ears" are objectionable. Color should be white in kids as well as in mature does and bucks; "red kids," although they ultimately shed out and produce good mohair, should be sold for slaughter because even the practical ranchman who has only grade does objects to bucks from strains that produce off-color kids. The Angora is not a milk goat.

Full covering of face and leg is sought; thorough belly covering is always looked for; but the inexperienced buyer is likely to be so much impressed with the appeal of these minor points as to neglect to assure himself of quality and weight of fleece on the really productive parts of the body. A full breech is desirable; but as breech hair is relatively coarse at the best, superior quality and weight of body hair in a goat with a slightly weaker breech must be given proper consideration.

The tendency of Angoras to shed the fleece in the spring has to a degree been overcome in occasional strains by selection and by care.

So-called "nonshedders" are goats that indicate that they would carry the fleece indefinitely unless forced into a period of shedding by lack of feed or improper feeding.

Natural oil gives life to the hair, helps preserve it, and protects the skin from alkali and other irritating dust. A soft, healthy skin is essential to the best production of hair; therefore, a sufficiency of oil secretion is desirable in breeding goats. This has been attained to an unusual degree by several breeders and to an extent formerly considered impossible with Angora goats. A good fleece should have ringlets or flat locks with fullness to the end or tip of lock, not scant at the end nor gimlet-pointed.

There are three types of fleece based on the type of ringlet. These are the "tight lock," the "flat lock," and the "fluffy" fleece. The Angora breeders generally prefer a well-developed ringlet; however, the flat lock is preferred by some and it produces a very desirable type of mohair. The tight lock is ringleted throughout



FIG. 5.—Type of forage on which Angoras thrive

almost its entire length; it is in the greatest degree associated with extreme fineness of mohair. The flat lock is usually wavy and forms a bulky fleece; this lock is usually associated with heavy shearing weight and a satisfactory quality of hair. The fluffy or open fleece is not so common, it probably stands lowest in character, and is objectionable on the range because it is easily broken and is torn out to a greater extent by the brush.

GOATS FOR CLEARING LAND

From Missouri eastward and in the Northwest, Angoras have served acceptably and profitably in clearing brush from cut-over land. Where their usefulness is known best these goats have often been rented out by their owners at 50 cents a head for the season to farmers having brush land to clear. (Fig. 5.)

When used for clearing land the goats must be confined to limited areas, and then successively returned as often as is necessary to keep the foliage and sprouts stripped. In the Ozark region of Missouri, where goats are used extensively for subduing brushy land, the tall brush is commonly cut 2 or 3 feet above ground. The stubs then throw out a more profuse growth of sprouts, which saps the life out of the roots and results in early destruction of the sapling. When large areas are adequately cross fenced or when the grazing is properly rotated to other fields, two years' grazing effectually exterminates the brush. When the goats are turned at large on extensive areas, or are not changed to fresh brush grazing when in need of more feed, they get into bad condition. From two to five goats to the acre are required for brushing purposes.

Special orchard lands, productive farms, and excellent grazing ranges for other stock have been established in this simple and inexpensive manner in nearly all parts of the United States.

The cut-over lands of the South afford goat feed in proportion to the amount of edible brush and weeds that follows timber cutting. The native grass alone will not supply the feed that is necessary. The unpalatability of this native grass and the much greater liability



FIG. 6.—Angora buck, doe, and three kids. Good type of breeding stock

to disastrous stomach-worm infestation due to constant grazing near the ground make the native-grass flats of the South unsuitable for Angoras. Rolling areas in the Southern States, however, support a large population of common goats in the dense underbrush; on such areas Angoras have been used to a certain extent.

In the Eastern States the initial choice between sheep or goats for any range should be made from the standpoint of vegetation; if brush persistently predominates, then goats may well be considered. But it should be remembered that sheep are much more available, the quality more likely to be high, and the final market for the product far more certain and remunerative in all the States outside the established goat ranges.

THE ANGORA BREEDER

By natural aptitude, by the characteristics of insight and skill, and by long experience in discriminating upon fine points of conformation and hair, a number of men and a few women in the United States have achieved marked success in breeding Angora goats. The largest and most successful ranchmen recognize the superiority of registered

bucks with distinctive characteristics and certain lineage; they concede that expert breeding is a painstaking business of its own. To fix desirable type in goats and in hair is a problem of years and demands a high degree of discrimination and perseverance in selective mating. Carrying a select breeding herd on the range in connection with large bands of grade goats is apparently impracticable because of the lack of restraint and the possibility of unknown and undesirable matings. The practical rancher, therefore, almost invariably patronizes the scientific breeder when buying bucks with which to improve his goat herd.

THE BEGINNER'S FOUNDATION FLOCK

The beginner should not aspire to produce high-class registered stock. High-grade does from the range are more satisfactory for a beginner and are usually available close around slaughter values.

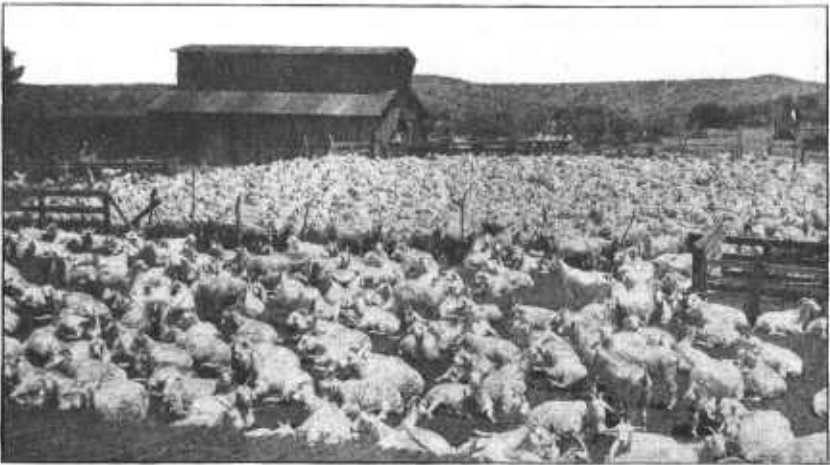


FIG. 7.—View of large goat ranch with good range in background

Such does should be mated with a registered buck of typical characteristics. Sires should be bought from breeders of known ability in producing the desired type.

It is not advisable to mate common straight-haired does with Angora bucks because several crosses are required to put on a fleece of satisfactory market value. The hair from a herd of high-grade Angora does and their kids will repay the original purchase price long before any market hair at all can be produced by grading up from common goats.

MANAGEMENT OF GOATS ON THE RANGE

IDEAL GOAT RANGE

The original home of the Angora goat, in Asia Minor, is a mountainous plateau from 1,000 to 4,000 feet above the sea. Most of the Angoras in the United States are raised under somewhat similar conditions. The goat is preeminently a browser, and for that reason goat ranges should afford an abundance of edible brush throughout

the year. Palatable evergreen brush, such as mountain mahogany or the evergreen oaks, is essential for winter feed on the open range. Coniferous reproduction, such as pines and firs, is not goat feed. A spring flush of weeds and a mixture of native grasses make admirable supplemental feed for goats, especially immediately after kidding. Mild climate, thorough drainage, good drinking water for the goats, and available space for comfortable bed grounds are important considerations on an ideal goat range. (Fig. 7.)

ADAPTABLE GOAT RANGE

There are ranges suitable for goats in the South, in the Mississippi Valley, and in the North. In summer the animals browse the brush, nibble the weeds, and pick at the grass just as they do on the ideal goat ranges. In the winter, even during open periods, the goats must not be expected to subsist on the dead foliage of deciduous brush.

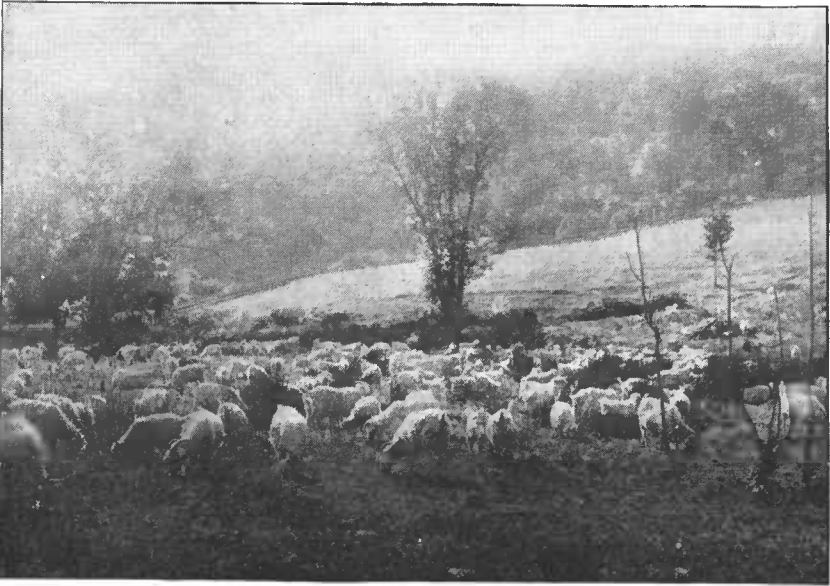


FIG. 8.—Type of goat range which, though not ideal, is capable of maintaining a profitable band of Angora goats

However extensive the savannas of the South, and however thick the brush on deforested areas of the Ozarks, goats will not winter satisfactorily on that kind of feed. The belief that goats peel brush on a great scale and subsist upon green bark is erroneous. Angoras destroy brush by keeping the foliage and buds stripped off during the period of growth. The presence of ferns and poison oaks does not indicate that there is a supply of forage on the range, for goats do not exterminate them. Where all-year browse is not available, a winter period of feeding is essential.

EVOLUTION OF RANGE PRACTICE

Better practice on goat ranges has been brought about gradually through the expensive method of making mistakes. Destructive overgrazing around camps has finally impelled ranchers to consider

at least an occasional change of bed grounds. Systematic rotation of the range should be such that successive portions of it are allowed an opportunity to make normal growth during the growing season for one or more years during a series of years. This normal growth will afford the grasses and brush an opportunity to recover from excessive grazing. Fertile seeds are produced and plants are given a chance to become established, resulting in an appreciable increase of palatable vegetation. Of course, there are difficulties attendant upon shifting the camp. The goat has a persistent and stubborn tendency to "go home" at night; and especially when first moved, small "cuts" will leave the band and turn up at the old camp. But ranchers who have changed camps often affirm that by degrees this natural tendency becomes modified and the band accustomed to frequent change.

Systematic rotation of the range permits young brush to make a start; annual growth of weeds and flowers has time to reseed; and



FIG. 9.—Angoras and ranch equipment, Yavapai County, Ariz. Desirable goat range in the background

grasses have opportunity to recover and make root growth. In Texas overgrazing of the range is being largely prevented by means of a series of fenced pastures. Annual growth is being protected and fostered and grass is permitted to reseed and get a permanent start. On open range, and especially on forest reserves, these conditions may be approximated by allotting divisions of the range for successive grazing.

HERDING

On the open range the average goat herd numbers about 1,200. In thick brush and on rough land a larger number can seldom be properly controlled by a single herder.

The experienced rancher does not expect to maintain a fixed and uniform system of herding among his bands. Good condition of the goats and of the range is accepted as evidence of satisfactory herding. In some cases the herder follows the band and in other cases

he works in the lead; managers, however, very generally prefer the herder who works ahead of the band, turning the lead goats back and avoiding unnecessary travel.

Loose grazing is preferred; the herder who walks the least is often altogether efficient.

MEXICAN MANAGERS

In starting goat ranches in new territory it has sometimes been assumed that the employment of a Mexican herder is a guaranty of success. This is a mistake. These herders need supervision, especially in business detail. Constant oversight of ranch methods is practiced by managers throughout the range States. Most Mexicans are adapted to isolated camp life and they may be willing to adapt their hours to goat-range practice, but in range States they are not employed for business detail and supervisory duties. It is advisable to obtain a good man who has herded sheep and who will handle goats as he did sheep.

MATING ON THE RANGE

Angora does kid once a year, coming in heat as early as the latter part of August. As the period of gestation is 147 to 155 days it is generally inadvisable to permit them to breed at that time, as it is the general practice to have most kids dropped during March and April, this being determined by the coming of safe weather and by the starting of spring feed. February and early March kidding is much less practised than formerly, because of exposure and loss of kids and because does at this time are not in good milking condition. Under safe conditions of shelter and feed early kidding has advantages, but October is early enough to have does breed.

Bucks should remain in the doe band 40 days. In case a doe does not conceive during the first heat, a period of 40 days will permit her to come in heat once more. If bucks are left in the band but 30 days it is inevitable that a considerable proportion of the does will come in heat but once during that time. The kid crop will be cut by just so many of these does as fail to "catch" at the one service permitted in the limited period. Such mohair as is likely to interfere with effectual mating should be clipped. It is usually essential to clip the long mohair from the buck's belly.

Bucks should be at least 18 months old, of evident vigor and strong masculinity. A sturdy buck to each 50 does has proved to be sufficient. Better service has been reported when the bucks in a large band were divided into two relays, each half being used alternate nights. Isolating and feeding the bucks during the day throughout the mating season increase efficiency and capacity for service.

Doe kids should not be permitted in the breeding band, as they should not be mated until 18 months old.

UNCERTAIN BREEDING

Bucks shipped long distances occasionally prove to be uncertain breeders for a short period thereafter; consequently, in case a long journey is necessary, the animals should be shipped several weeks in advance of the breeding season.

A period of short feed, with the consequent poor condition of the does, immediately preceding the mating seasons results in less uniform breeding. For this reason special care should be exercised to provide the best range available in preparing the does for the mating season. Late weaning of kids tends toward indifferent and deferred breeding of the does.

GOAT SHEDS

Goat sheds on the range are simple in construction; lumber is seldom at hand. Sheds are uniformly low, generally have metal roofs, and are boarded on one or two sides. They are utilized in case of cold rain and sudden changes of temperature soon after shearing. Unless protection is available at such times, losses of goats are sometimes disastrous. Five square feet of floor space per animal is ample for range goats; many ranchers carry goats in less space, but at least 4 or 5 square feet of floor space is needed to prevent disastrous piling of the goats in time of storm. With insufficient shelter at such times the goats pile up and the herder must break up the masses at once if loss by smothering is to be prevented. Goats should occupy sheds only when necessary; otherwise they will not be accustomed to moderate cold and will withstand extremes of temperature less readily. When well fed and not newly sheared, goats seldom succumb to cold.

In rigorous northern climates barns or closed sheds are necessary for goats under the conditions just mentioned. More floor space is required, of course, if the animals are housed every night. Their care in this respect should be similar to the care of sheep.

FEED

On the range "feed" means browse, weeds, and grass. Evergreen brush (not cedar or other coniferous vegetation) is relied upon for winter feed. When supplemental feed is necessary, hays, kale, rape, milo maize, feterita, oats, and similar feeds suitable for sheep are used.

WATER

Goats subsist on less water than other stock, but they should have access to water daily. Lack of available water limits successful goat ranching in sections of our best range States. Water on the range is preferable to water at camp only, as the goats acquire the inclination to return prematurely to camp for water or obstinately return to old bed grounds, where they know they can get water.

SALT

Goats should be salted regularly and frequently, and if possible they should have a constant supply of salt, for if salting is neglected they get very eager for it and when finally salted may pile up and cause smothering. In case of small flocks it may be advisable to salt only at the corral in order to get the goats to return regularly.

SHEARING

In southern range States goats are sheared twice a year, in March immediately before kidding and again six months later. Unless this is done more or less hair is lost from shedding. In the North and Northwest the clip is taken off only in the spring. Machine shearing is the almost universal practice. Clipping is usually done on a table (fig. 10). The fleece is rolled, cut side out, but not tied. Texas hair generally goes to market in 5-foot bags; farther west the 4-foot bag is common.

CARE AT KIDDING TIME

Nothing has contributed to greater loss on goat ranches in the past than lack of a safe system of kidding. On all good ranches the staking system has rapidly superseded careless methods that entailed heavy loss of young kids. At the kidding camp are one or more yards of sufficient size to allow room for stakes for as many kids as may be dropped within any 10-day period. Ten feet between stakes

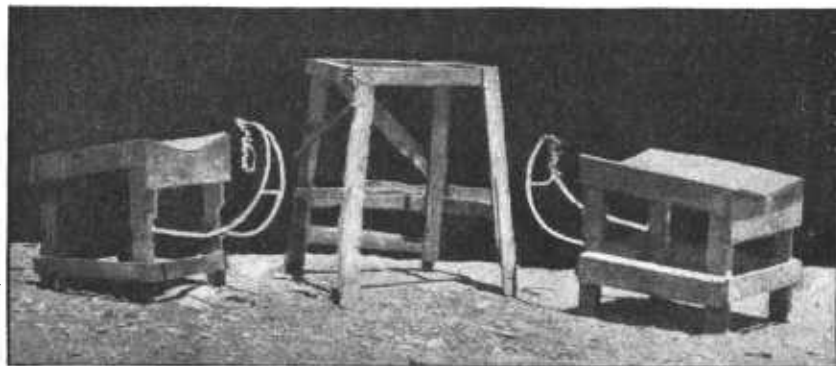


FIG. 10.—Equipment used in shearing Angoras. Shearing tables and bagging frame

is the ideal space, though many stake more closely. Ten feet is enough to avoid confusion, afford room for handling, and minimize quarreling of the does. Careful investigations and observations in recent years have shown that the pen system of kidding is more economical and requires less work to obtain equal results than the staking or toggle system. Even where the toggle system has been used it has proved to be worth while to have individual kidding pens, which may also be used as "bum pens" to force does to accept disowned kids of their own or orphan kids.

The toggle system requires stakes with approximately 15 inches of rope carrying a swivel and a simple leather loop for attaching to the fetlock joint of the kid. Each kid requires a box for shelter from sun and rain; the most substantial box is made of 12-inch boards, with one side open. (Fig. 11.) A-shaped boxes and boxes without bottoms are frequently used, but they do not keep the kid off the ground and are easily broken up by hard usage. (Fig. 12.) Both "toggles" and boxes should be substantial and should be promptly stored as soon as the kidding season is completed.

The staking yard should have, if possible, a slope for drainage. Older does will spend the night at the upper side; so their kids should be staked there. The kids of the young does should be staked on the lower side, for if they are staked among old does the latter may drive the young does away from their kids at night. Does that fight or habitually overturn the kid boxes should have their kids staked at one end or corner of the inclosure.

On cold, rainy nights the does should be confined or otherwise kept out of the staking yard, for each time a doe passes through the yard to her kid other kids will come out of the boxes and suffer needless exposure to the bad weather.

The does to kid during the day should be cut out of the band each morning and be left at camp. This saves the labor of bringing kids from the range. A fenced pasture of a half or even a quarter section is most convenient for the use of the drop band during kidding.



FIG. 11.—Yard scene showing common type of kidding box, Sutton County, Tex.

When kids are dropped on the range, care must be taken that the doe does not leave her kid and follow the band. In the afternoon the few scattered kids may be brought to camp in the drop wagon or by hand. To prevent possible disowning of kids, the attendant should avoid rubbing them together while being brought in. Mexican herders often prefer to tie the newly dropped kid to the doe's neck, while an extra man brings out a small cut of dry does to "toll" them into camp. Adept herders easily induce the does to bring in their own kids by this method, but kids handled in this way should be strong.

A doe which disowns her kid should be staked with it. One of the largest Angora ranchers in the United States requires his herders to stake each doe over her kid for at least 10 hours, immediately after kidding; in fact, he insists that in all possible cases the doe shall be staked before kidding. He rightly contends that a doe naturally returns to find her kid where she has dropped it, and for this reason he prefers to have the doe drop her kid at the point

where it is to be staked. In case of disowned kids this man's herders stake the doe by both front and hind feet immediately over her kid's stake. In the most obstinate cases the doe is twitched by the lower jaw instead of by the forefoot.

In case a kid dies, the mother doe should be staked immediately to an orphan or a twin kid. She should be confined with the kid either in a closed pen or in some other way until the foster offspring has been adopted. The presence of "sanechos" and "dogies," as these orphan kids are called, around a kidding camp is evidence that such details have not been given adequate attention.

When a kid is staked it should be given a number with paint and the doe should be numbered the same. One rancher clips the doe's tail and puts the number there. Other ranchmen identify kid and doe by a system of paint points similarly located on the body of each. Either system enables the herder to bring doe and kid together



Fig. 12.—A-shaped type of kidding boxes

again at any subsequent time without the slow process of examining ears.

The careful herder passes through his yard each morning and evening to be sure that every kid has nursed. If a kid is gaunt or restless and is found nibbling the ground, its mother should be brought to the stake. If a doe has a distended udder the kid bearing her number should be examined. Does with extra large teats often require repeated individual handling till the kid has learned to suck the abnormally large teat. For this reason practical ranchers prefer to weed out such does, for they make much extra work and often cause loss of kid or udder.

Kids seldom should be kept on the stake more than 10 days. At that age they should be worked out of the staking yard, preferably into a small field permitting more exercise than a small corral. In

general the kids are not turned on the range with does in the morning until they are 6 weeks old. Separation each morning is facilitated by placing a "jump board" at the gate. A substantial board about 18 inches high will keep young and weak kids from leaving the corral. A bridge extended from the corral over this board will help prevent does from trampling kids at the gate.

A few of the large ranchers of the Southwest release the kids directly from the stake to the range with the does. These men insist that the longer the kids are kept in a separate band the less likely each is to follow the doe when put on the range. They also contend that kids handled in this manner earlier develop strong muscles and bones. The kids are released in bands every few days, and on those days an extra man goes out with the regular herder to help keep the band together. Enough stops are made on such days to enable the younger kids to get necessary rest and sleep. Care is needed to avoid losses due to separation of kid and doe even when the kids are kept up two months. In large, fenced pastures where herding is not practicable small cuts of kids are likely to spend one or more nights away from the band with two or three does before they find their mothers. When this happens the kids are liable to die or the does' udders to suffer serious damage. Therefore under the fenced-range system as practiced in Texas it is highly advisable to "herd in" the whole band each night or at least on alternate nights so as to be sure that each kid gets to its dam often enough to avoid damage to udders and loss of kids. An 80 per cent kid crop is considered excellent for range bands.

FENCING

Corrals on the range are usually made of brush pickets secured by wire in the form of a tight stockade. Other wolf-proof fences may be constructed by using 36 to 42 inch woven wire for the lower part, with two strands of barbed wire on top spaced to about 50 to 56 inches total height. A goat-proof fence requires not less than eight barbed wires with a height of not less than 4 feet. Goats with obstinate, fence-breaking habits usually result from careless fencing. Beginners are advised against buying unruly goats from farmers or ranchers who maintain poor and ineffective fences. When woven-wire fencing is used it should be of 12-inch mesh, as Angora goats will get their heads through and get hung up if 6-inch mesh is used.

BRANDING

On the open range, branding is imperative to prevent loss of stock by straying and by theft. A brand on the face is most efficient. Ear crops and splits serve the same purpose less effectively. The tattoo in the ear as a rule remains permanent only when applied after the animal is 6 months old. Button tags are ineffective for identification because they are easily torn out by the brush or wire fences.

CASTRATION

Buck kids that are not to be used for breeding should be castrated when from 1 to 2 weeks old. The operation consists in cutting off the end of the scrotum and drawing out the testicles with a steady

pull. Some operators prefer to scrape off the cord. In kids much older the membrane covering the testicle should first be slit so as to prevent tearing that tissue higher up, which is likely to result in internal bleeding.

RIDGELINGS

In kids it is common to find that only one testicle has descended into the scrotum. This testicle should be removed, and the animal marked for early slaughter. These ridgelings, though capable of breeding, should not be used for breeding purposes.

WEANING

On the range, kids are weaned at about 5 months of age. After weaning, the does can gain in flesh so as to be more certain of breeding at the proper time. A few young wethers are preferable to old does for lead animals in the kid band, for they cover less ground and are not likely to teach the kids the undesirable habit of "trailing."

MOHAIR PRODUCTION AND CONSUMPTION

The annual production of mohair in the United States averaged about 15,000,000 pounds during the 5 years, 1931-35. With the millions of acres in the United States adapted to goat raising and with our Angora breeders constantly increasing the shearing qualities of their goats and perfecting the type of hair, Americans are now producing practically all the mohair required by our manufacturers.

Mohair is used for car upholstering, portières, robes, rugs, braids, and artificial furs, and there is considerable use of superior mohair in suit linings and for men's summer suitings.

GRADING MOHAIR

The value of mohair depends upon its length, fineness, luster, density, and freedom from kemp. Most mohair is of the 6-months' clip, and to comply with market requirements this hair should be 6 inches in length.

Kemp is a coarse, shorter fiber frequently appearing on the shoulder, neck, rump, or along the back. Doubtless kemp results from a remote outcross or original foundation of coarse-haired goats. In range animals it is seldom altogether absent. Its gradual elimination by selective breeding is highly desirable.

Luster is that bright glossiness unique in mohair fabrics. Relative luster of fleece is to be distinguished only by the experienced eye.

Fineness of mohair may be determined by the eye or by means of a mechanical device. But in practice fineness is associated with softness and is recognized by the experienced touch when handled between the thumb and fingers.

Kid hair is finest and is especially desired by mills. The hair from does and young wethers ranks next. Buck fleeces are coarsest and grow more so with the age of the animals. It is possible for any grower to classify his mohair to this extent. Within each of these classes the market recognizes several grades. The grower, so far as

he is competent, should grade his product systematically. Fleeces should be rolled up to prevent the mixing of the mohair of different fleeces. When packing the clip for market keep the kid fleeces separate from those of the mature goats, and the buck fleeces by themselves. Fleeces that are extremely coarse, shorter than 6 inches and weak, or those having an excess of kemp and burs or other foreign material should be kept separate from clean, strong fleeces of desirable length and fineness.

It is astonishing to find so large a proportion of our mohair going to market with all grades in a single bag. On many shearing floors little effort is made to keep the fleece intact. Under such conditions it is evident that when all grades are thrown together, subsequent thorough grading is rendered impossible by reason of parted fleeces and the mixing of different grades of hair. So long as this mere bulk production of hair is the only end sought, to the exclusion of grading consideration, our mohair can not meet the highest requirements of the manufacturer nor command the top price.

Excessively high prices for mohair, ranging from \$9 to \$20 a pound, have sometimes been misunderstood. This is an especially long, coarse, lustrous hair available only from goats that have so strong a tendency not to shed that with normal feed and attention they will carry their fleeces for two or three years. The fleece must be tied up about the animal to prevent damage to the hair. The product is used for making ladies' switches, dolls' hair, and theatrical wigs. Although there may be an opportunity for breeders to establish strains of Angora goats that will not shed their fleeces, the tendency is very rare in most herds, and this phase of the industry is highly specialized. Mohair ranging from 2 to 3 feet in length is nowhere produced on a large scale and constitutes only an interesting incident in mohair production.

GOAT MEAT

The average goat carcass is not so well fleshed, is not susceptible of so high a finish, and does not give so high a dressing percentage as the average sheep carcass. When received in large numbers the Angora wether sells at about 60 per cent of the price of the sheep wether.

Goat meat in wholesale cuts and carcass form quite generally goes into the regular meat trade, as there is only an occasional municipal restriction against such practice. In cities and towns adjacent to the range, Angora wethers are freely marketed as such and the meat is consumed without discrimination by the buyer. The reduced cost to the consumer is attractive, and the quality doubtless is superior to the mutton that may be bought at the same price. A characteristic sweetness of properly finished goat meat is the reason given by a few consumers for their ability to distinguish between mutton and goat meat. Goats that lack finish are sold as "canners."

The status of goats and goat meat on eastern markets has never been established by any considerable volume of business; and for that reason occasional efforts to sell good Angoras on such markets have met with serious disappointment.

The term "chevon" has been adopted by some of the Angora goat producers as the word to designate goat meat, and its use in this connection is recognized by the United States Department of Agriculture.

ANGORA WETHERS

Angora wethers are marketed when from 2 to 5 years old. During this period they yield fleeces that age has not rendered objectionably coarse and that run heavier than fleeces of does that suckle kids. Mortality is appreciably less than in a doe band. Wethers, of course, continue to take on additional weight over what they would carry if marketed as kids. Year-round herding cost of a wether band is much less than that of a band of breeding does. These facts serve to explain the practices of retaining Angora wethers on the range for several years.

Angora wethers dress out less than mutton stock, and for that reason ranchmen expect a discount. However, very uniform shipments of Angora wethers sell at seemingly sharper discount than they should sell for in comparison with similar goats showing less uniformity and less quality. The presence of nondescript bands of common "brush goats" on any market is sure to react against the uniform Angora stock. For this reason stamping the Angora carcass "Goat meat" or "Chevon" evidently would fail to guarantee to the dressed carcass the estimation that Angora ranchers desire as evidence of the quality it is known to possess.

Angoras should not be consigned to a large market where goats are not slaughtered. When possible, the Angora raiser may well seek a special market. One of the largest Angora owners in Arizona has supplied about 250 Angora wethers monthly to mining towns within driving distance of his ranch.

HEALTH IN GOATS

Like sheep, goats are relatively much less susceptible to bacterial diseases than other domestic animals.

STOMACH WORMS

Goats are susceptible to the invasion of stomach worms to an extent very similar to that in the case of sheep. In moist climates and during wet seasons the infestation is augmented. The dryness of the range States, the large area available, and a profusion of brush free from the infestation generally prevent damage in sections so favored. But on the lower ranges, especially following a rainy season, losses have occurred. The symptoms are emaciation (generally) and a pale, anemic condition of the skin and mucous membranes. The worms should be looked for in the fourth stomach. Farmers' Bulletin 1330² outlines the bluestone treatment, which is satisfactory in expelling the worms. Infestation is taken in with grass and contaminated water. Therefore, frequent changes of grazing ground serve in a measure to prevent the trouble. Of course, goats that browse much are markedly less liable to become wormy than those compelled to graze most of the time on grasses.

² Farmers' Bulletin 1330, Parasites and Parasitic Diseases of Sheep.

LICE³

Goats require dipping to prevent great damage by lice. Coal-tar dips, nicotin sulphate (sometimes with 2 per cent flowers of sulphur added to the solution), and arsenical dips are effective. Two dipplings, 12 to 14 days apart, are necessary to eradicate the lice. For convenience some ranchmen use a commercial arsenical preparation (usually at half strength of that used for dipping cattle). This solution is poisonous, so that all precaution must be taken against drinking by animals and against drip to the grass. Reports of "burning" the skin of goats in such solution (at times causing death) usually find correct explanation in the overheating of the animals in taking them to or from the vat.

Large ranchers use the long vat, preferring to have the goats enter by a plunge from the end, declaring that the animals are least likely to swallow dip when entering in that way. Small owners and breeders generally use the short vat, holding the animals while in the solution. Narrow chutes to the vat are quite impracticable, because the animals refuse to be driven through them. Catch pens should be small and situated immediately at the end of the vat (or at the side). Construction of the vat on a slope is often practiced, so that the attendant may stand on lower ground at the side of the vat while caring for the animals in the dip.

ABORTION⁴

Abortion may be caused by bacterial invasion, rough handling or injury, or by the use of moldy feeds. Sanitation, careful handling, and the feeding of clean, fresh feed may help to prevent this trouble.

LIP-AND-LEG ULCERATION⁴

Lip-and-leg ulceration, commonly called sore mouth or contagious foot rot, is a bacterial disease sometimes encountered among goats. It is characterized by sores or ulcers on the lips, nose, legs, or other parts of the body. If not properly handled, this disease spreads through the flock rapidly, and especially at kidding time may cause serious losses. Fortunately it is a disease which will respond readily to proper treatment. The diseased animals should be separated from the remainder of the flock until they have fully recovered. If possible, the healthy flock should be dipped and moved to fresh pasture and a clean bed ground. This will help to prevent a fresh outbreak of the disease. The diseased animals should receive careful attention. The ulcers should be scraped clean and thoroughly washed with a 3 per cent solution of cresol or a coal-tar dip. In case the ulcers are particularly bad it may be advisable to touch the diseased tissue with a solution made up of 1 part nitric acid to 7 parts water.

SWELLHEAD⁴

A condition known as "swellhead" occasionally has been observed. It is characterized by severe swelling about the head and the effusion of a yellowish fluid throughout the tissues of the head about the

³ Leaflet 13, Sheep and Goat Lice.

⁴ Farmers' Bulletin, 1155, Diseases of Sheep.

cheeks and ears. Internal vital organs (especially the liver) exhibit a similar condition. Goats so afflicted often die. The Texas Experiment Station has been conducting field and laboratory investigations of this condition, but no causative organism has been found; consequently, the condition has not been dissociated from feed elements. Investigators at this station have reported the occurrence of swellhead in goats that had been fed the buds and flowers of *Nolina texana* and have considered this as one of the probable causes of the condition. Among other plants that have been associated with swellhead is *Agave lecheguilla*. Keeping the animals in a quiet, cool, protected place has sometimes seemed beneficial.

CAKED UDDER

At kidding time congestion of milk or chilling and bruising of the udder may cause it to cake and become inflamed. This trouble may be prevented to a considerable extent by careful attention to see that all does are suckling their kids, and by protection from extreme cold and rough handling. Frequent application of hot water, or sweet oil if available, a thorough milking and rubbing at least two or three times a day, will reduce inflammation in the ordinary case.

POISONOUS PLANTS⁵

As compared with those of sheep, reported cases of the poisoning of goats by plants are not numerous. This is probably due largely to the feeding habits of the animals and not to a difference in the susceptibility of the two species. Goats are even more inclined than sheep to vary their diet. They also are less greedy feeders than the latter animals, so that it is thought they do not so frequently eat enough of one plant at a time to become poisoned. Recent field observations and feeding experiments strongly indicate that goats are no more resistant to toxic substances than sheep, in fact, they are even more susceptible to some plant poisons. It is known that under the conditions existing on goat ranges and in some pastures goats are occasionally poisoned by several plants. Among these are locoes, coyotillo, species of cherry, coffee bean, species of *Kalmia*, sacahuiste (*Nolina texana*), and the so-called "lechuguilla" of the Southwest. The latter plant, *Agave lecheguilla*, has been shown to be one of the causes of a condition in goats and sheep characterized by jaundice. This condition, known as "lechuguilla fever," is frequently confused with swellhead. Although a definite relationship between the two conditions may exist, it has not yet been established.

ORGANIZATIONS

American Angora Goat Breeders' Association, Rocksprings, Tex.
Angora Journal, 527 Board of Trade Building, Portland, Oreg.

⁵ See Department Bulletin 1245, Stock-Poisoning Plants of the Range.